

In the Claims:

1. (Currently Amended) A powder coating spray system comprising:

a spray booth that at least partially encloses a spray area in which powder overspray is produced during a spraying operation;

a powder feed apparatus that supplies powder to spray guns in said booth;

a powder extraction apparatus that removes said powder overspray from said booth and transfers said powder overspray to a first collection device, said first collection device comprising a cyclone;

a vacuum line conduit with first and second ends that connects said cyclone to a second collection device; and

a vacuum source connected to said cyclone through said vacuum line conduit and producing a negative pressure within said vacuum line conduit between said first and second ends to transfer powder overspray from a powder outlet of said cyclone to said second powder collection device.

2. (Original) The system of claim 1 wherein said first collection device comprises a dual cyclone separator.

3. (Original) The system of claim 1 wherein said second collection device comprises a powder feed hopper in a feed center.

4. (Original) The system of claim 3 wherein said vacuum source is connected to a vacuum receiver and filter assembly that receives powder from said cyclone and supplies said cyclone-received powder to said powder feed hopper.

5. (Original) The system of claim 4 wherein said vacuum receiver is connected to said cyclone by rigid tubing; and a cleaning device that is drawn through said tubing by said vacuum source to clean powder from said tubing.

6. (Original) The system of claim 5 wherein said cleaning device is a foam-like mass.
7. (Original) The system of claim 4 comprising a sieve and vibrator assembly disposed between said vacuum receiver and said powder feed hopper.
8. (Original) The system of claim 1 wherein said powder extraction apparatus comprises a vacuum duct disposed within said spray booth to remove powder overspray therefrom.
9. (Original) The system of claim 8 wherein said powder spray booth comprises a floor that rotates about an axis; said vacuum duct being suspended above said floor and stationary with respect thereto to remove powder overspray from said floor as said floor rotates during a spraying operation.
10. (Previously Presented) The system of claim 8 wherein said vacuum duct is connected to an inlet of said cyclone.
11. (Original) The system of claim 1 wherein said first collection device comprises a cyclone separator having a powder outlet opening; and a cyclone outlet interface that receives powder from said cyclone outlet; said interface having at least one port connected to said vacuum source to remove powder from said interface as said powder enters said interface from said cyclone.
12. (Original) The system of claim 11 wherein said vacuum source draws powder from said interface at a rate at least as fast as a rate at which powder enters said interface from said cyclone.
13. (Original) The system of claim 11 wherein said interface comprises a second port connected to a second vacuum source so that powder from said cyclone outlet bypasses said feed center.
14. (Original) The system of claim 1 wherein powder is supplied to spray guns in said booth from a hopper in said powder feed apparatus; at least a portion of said powder being powder overspray from a spraying operation; said powder overspray being extracted from said booth during a spraying operation, transferred to said first collection device and then back to said hopper, to produce a substantially continuous closed loop flow of powder during a spraying operation.

15-27. (Canceled).

28. (Currently Amended) A powder spraying system of the type having a spray booth and a powder feed hopper for supplying powder to a spray hopper, comprising:

a powder extraction device in said booth that collects powder overspray from the booth to a cyclone outside the booth; and

a vacuum device that conveys powder from a powder outlet of said cyclone through a vacuum line conduit that is under negative pressure to the feed hopper.

29. (Canceled).

30. (Previously Presented) The system of claim 28 wherein said cyclone separator comprises two cyclones.

31. (Original) The system of claim 28 wherein said powder extraction device comprises a duct that extends over a floor of the booth and draws powder off the floor during a spraying operation.

32. (Original) The system of claim 31 wherein said floor rotates about a longitudinal axis of the booth and relative to said duct.

33. (Original) The system of claim 32 wherein the booth is generally cylindrical and the booth floor is circular.

34. (Original) The system of claim 32 wherein the booth and floor comprises very low conductivity composite material.

35. (Original) The system of claim 34 wherein the booth is self-supporting and is suspended in a cantilever manner over said floor.

36. (Original) The system of claim 34 wherein said floor is supported in a cantilever manner on a central hub.

37. (Canceled).

38. (Previously Presented) The system of claim 28 wherein said vacuum device conveys powder from said collection device to said feed hopper via a sieve.

39. (Previously Presented) The system of claim 28 wherein said vacuum device is connected to a vacuum source; the vacuum in said vacuum device being periodically interrupted to permit powder discharge from said vacuum device.

40. (Original) The system of claim 39 wherein said vacuum device comprises a discharge valve at the bottom of said vacuum device that opens under the force of gravity when said vacuum device is not under vacuum.

41. (Original) The system of claim 40 comprising an actuator that closes said discharge valve.

42. (Original) The system of claim 28 wherein said feed device comprises a powder feed hopper.

43. (Original) The system of claim 42 wherein said feed hopper is installed in a powder feed center as part of an application system.

44-47. (Canceled).

48. (Currently Amended) A method for quick color change in a powder spraying system of the type having a spray booth and a powder spray application system, comprising the steps of:

continuously drawing powder overspray from said spray booth during a spraying operation by operation of a cyclone with powder overspray being collected by the cyclone;

conveying powder from the cyclone to said application system under vacuum by applying a vacuum to a vacuum line conduit that is connected at a first end thereof to a powder outlet of the cyclone and that is connected at a second end thereof to said application system.

49. (Original) The method of claim 48 comprising the step of drawing powder from the booth floor into a duct using low pressure air flow into the duct.

50. (Previously Presented) The method of claim 48 comprising the step of continuously conveying powder from said cyclone to a second collection device.

51. (Original) The method of claim 50 comprising the step of periodically discharging powder from said second collection device to said application system.

52-64. (Canceled).

65. (Previously Presented) A powder coating spray system comprising:

a spray booth that at least partially encloses a spray area in which powder overspray is produced during a spraying operation;

a powder feed apparatus that supplies powder to spray guns in said booth;

a powder extraction apparatus that removes said powder overspray from said booth and transfers said powder overspray to a first collection device, said first collection device comprising a cyclone; and

a vacuum source connected to a vacuum receiver and filter assembly that receives powder from said cyclone to transfer powder overspray from a powder outlet of said cyclone to a feed hopper in a feed center.